Microsoft

.net developer training

Create XML Web Services and Applications with Visual Studio .NET

Making Your Applications Scalable and Reliable

Module 11 Agenda

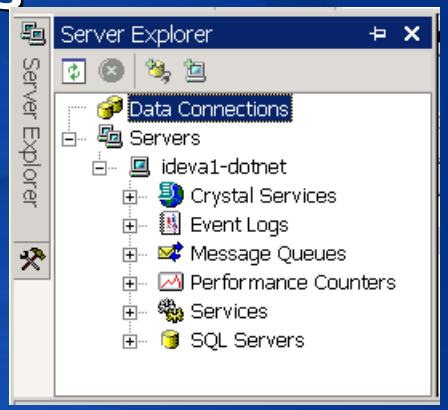
- Application Goals
- Visual Studio .NET Server Explorer
- .NET Messaging, MSMQ
- Windows Services
- COM+ Integration
- Application Diagnostics
  - Performance monitor
  - Event log
  - Tracing
- Testing

Application Goals

- Scalable
- Reliable
- Tunable
- Testable

Visual Studio .NET Server Explorer

- Server Explorer
  - Tool for working with server features
  - Useful in integrating features into your application
    - SQL Server Data / Schema
    - Event logging
    - Performance monitor counters
    - Windows services
    - MSMQ integration
  - Also useful for exploring server features



.NET Messaging (MSMQ)

- Scalable, transacted, reliable cross-machine and cross-platform messaging
  - Good for high performance applications
- Based on Microsoft Message Queue 2.0
- Send and receive objects, primitives, custom
- Disconnected and connected
- Message Queue administration

Adding MSMQ Support

- Messaging support is baked into Visual Studio .NET
- Queues are accessible from Server Explorer
  - Drag and drop features work with designer
    - Objects are created under the covers
    - Require minimal code from developer:
      - ie. MessageQueue1.Send(OrderInfo)
    - Objects can be serialized into queues

Windows Services

- Unique application model
  - Application that runs in the background with its own
    - credentials
    - error handling
- Many useful scenarios:
  - SQL Server
  - Antivirus
  - IIS – Web server and FTP server
- Managed with Service Control Manager

Windows Services in .NET

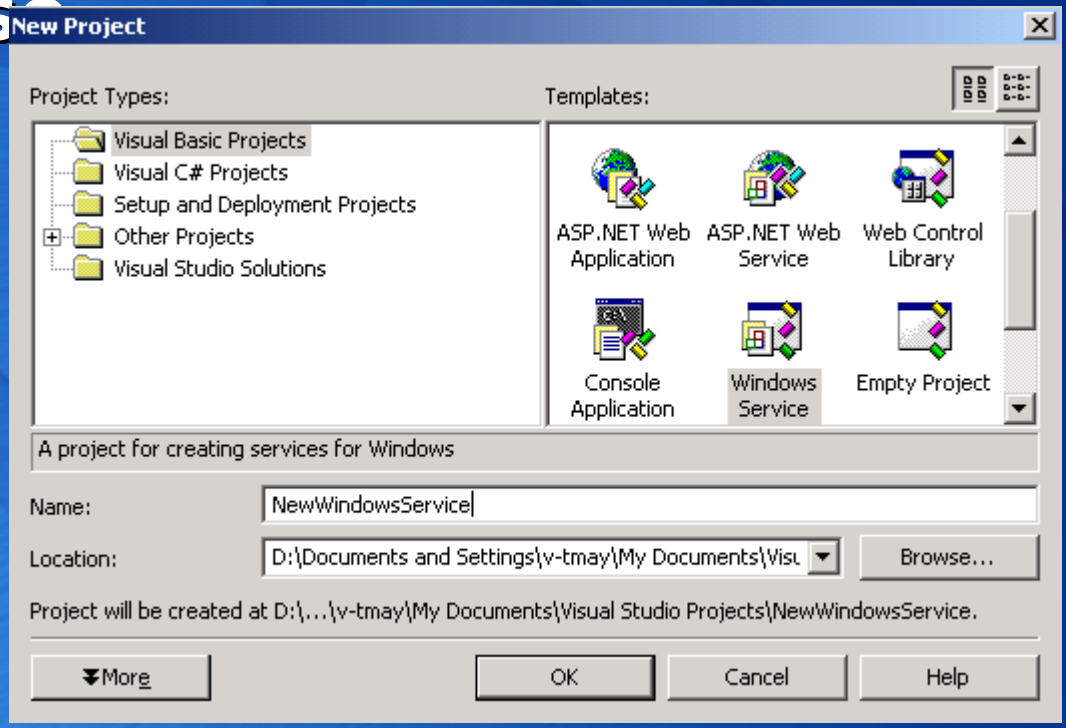
- Baked into .NET
  - Extend a service base class
  - Override methods (OnStart, OnStop)

- Respond to events
  - Receive Message Queue
  - Change Directory/file
  - Write event log
  - Timer tick

- General Tasks
  - Perform long-running tasks
  - Provide utility functions
  - Serve as a data transfer engine

Windows Services
Demo

- Windows Service
- Add Windows service to watch for an XML file in a folder, then add the file to the database

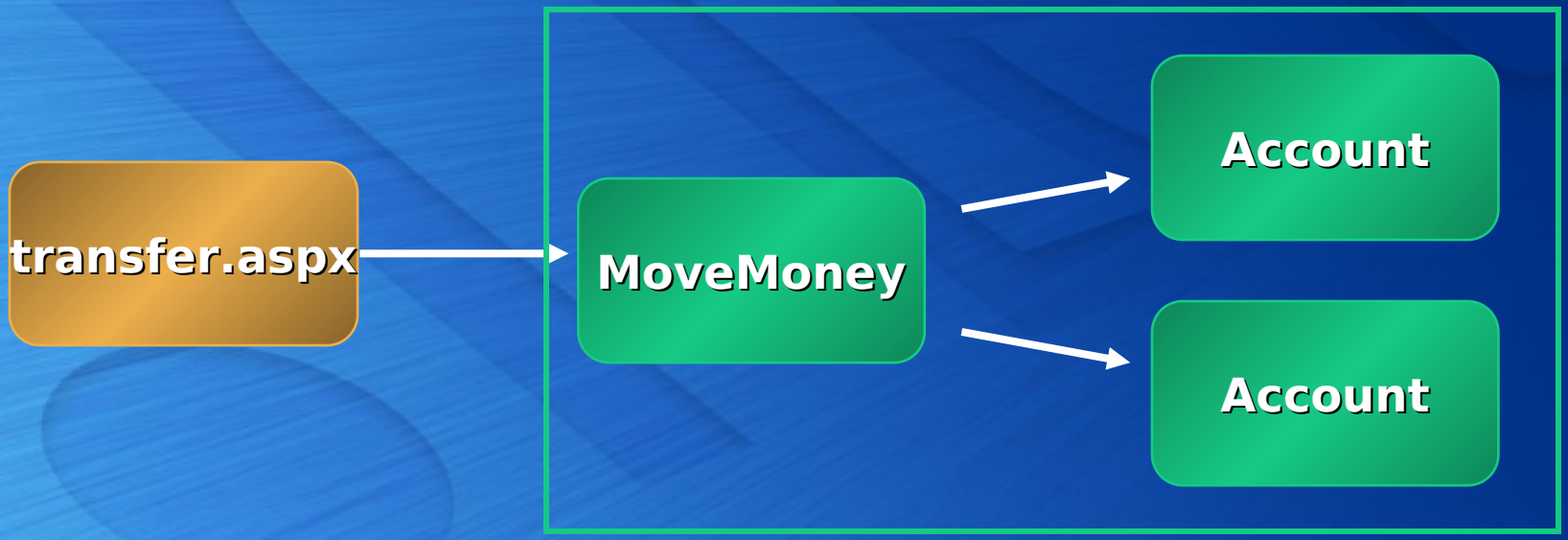


COM+ and .NET Applications

- Attributes define COM+ properties
  - Custom attribute is set in code
  - Compiled into the metadata
- Admin can override some service settings, e.g.
  - Object Pool minimum, maximum, etc
- COM+ Services, CLR and .NET Framework work together

ASP .NET and COM+

- **ASP.NET Interacts with COM+**
  - **Set by transaction directive**
  - **Interacts with .NET components**



Deployment of COM+ Applications

- XCOPY deployment with dynamic registration
  - When component is first used, .NET takes care of
    - Creating COM+ Applications
    - Adding .NET Components to COM+ Applications
    - Configuring services in COM+ catalog
  - Needs to be an administration
- Preload
  - Create COM+ Application - COM+ Explorer, Script
  - Add Assembly to the GAC - Gacutil.exe
  - Add Assembly to COM+ Application - RegSvcs.exe

Application Diagnostics Topics

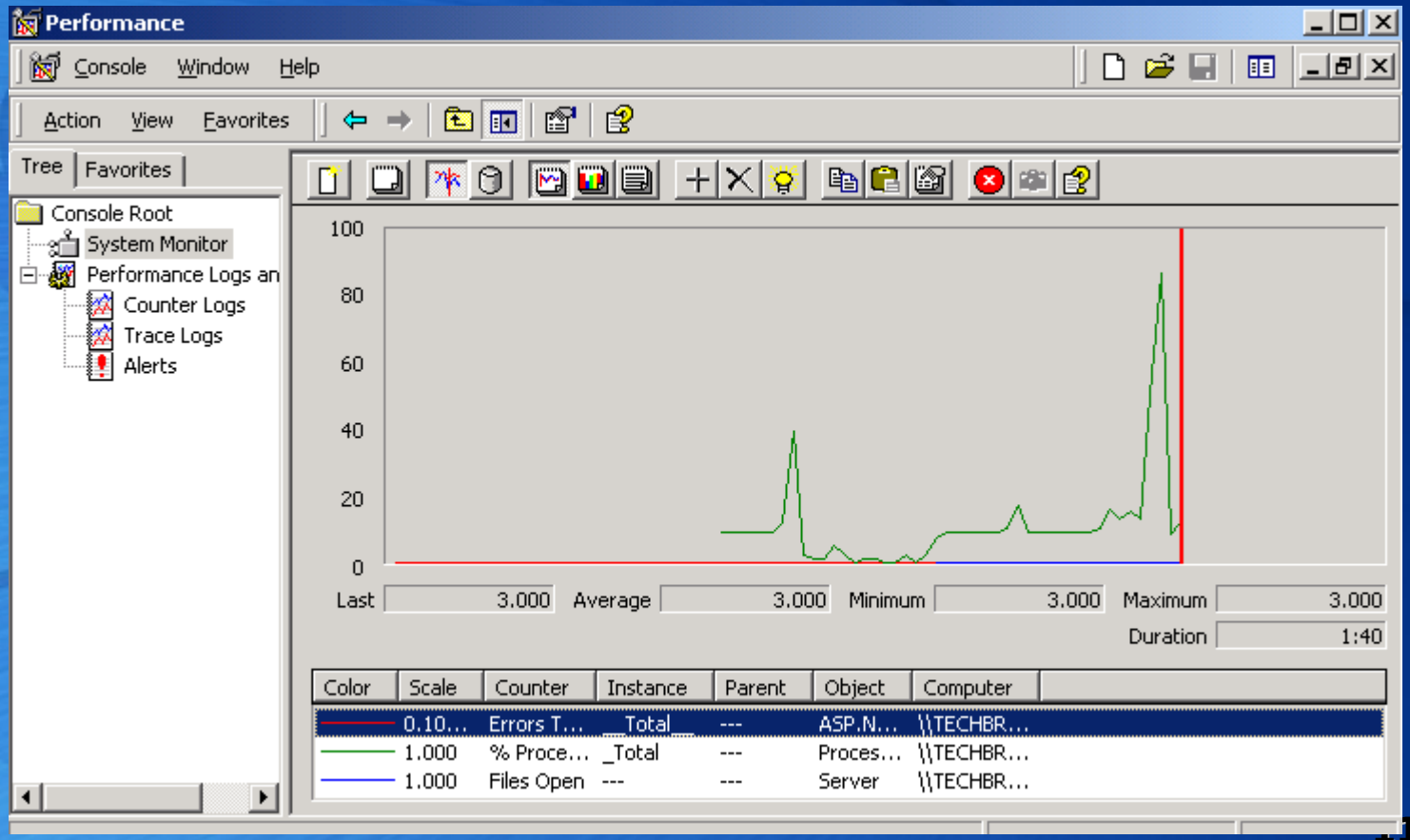
- Event Log
  - Read from and write to custom or system event logs
- Performance Counters
  - Set and monitor custom or system performance counters
  - Visualize using performance monitor MMC
- Tracing

Application Diagnostics
Performance Monitor

- Use in Visual Studio .NET to create new categories and counters
  - Each counter has
    - Name
    - Type (NumberOfItems32, etc)
    - Description
  - You can also create counters using
    - PerformanceCounterCategory.Create

Application Diagnostics
Performance Monitor: Demo

- **PerformanceMonitor**



Application Diagnostics
Event Log

- **EventLog Class**
  - **Supports reading and writing to logs**
    - **Custom logs or system logs**
    - **Use with Server Explorer or entirely in code**

Application Diagnostics
Event Log: Demo

- Event Log
- Add support to application for event logging

Application Diagnostics
Tracing

- **Instrument your code**
- **Systems.Diagnostics** namespace includes **Trace** and **Debug** classes
- **Choose listeners**
  - **Console: Windows-based debugger, the Output window will show Debug and Trace messages**
  - **File: The System.Diagnostic namespace provides a TextWriterTraceListener**
  - **Event log: The System.Diagnostic namespace provides an EventLogTraceListener**

Application Diagnostics
Tracing Demo

- Tracing
- Add Tracing to an application

Testing

- **Visual Studio Tools**
  - **Visual Studio Analyzer**
  - **Application Center Test**

Testing
Visual Studio Analyzer

- Visual analysis tool for distributed software
  - Isolation of faults in a distributed application
  - Discovery of application design flaws
  - Identification of performance bottlenecks
- Obtains events from multiple Microsoft technologies and any WMI provider
- Offers APIs for automation and customization

Testing
Application Center Test

- Test Web Services and applications
  - Stress & functional testing
- Easy to create and run tests
  - Record via browser, or, use script
- Open extensible architecture
  - Scriptable test object provides full control
  - Automate tests using the application object model
- Rich customizable reporting
  - Built on XML

Summary

- Make you applications scalable and reliable by
  - Adding monitoring features
  - Using tracing to automate debugging
  - Building scalable features into applications (such as using MSMQ)
  - Load test and analyze applications

Resources

- ***Basics of scaling applications*** **- Simple article on ASP, ASP+ and .NET**
  http://msdn.microsoft.com/msdnmag/issues/0900/aspplus/aspplus.asp

In-Depth Training on Scalable Applications

Direct from Microsoft

- 2203A: Deploying and Managing Microsoft Application Center 2000
- 2350A: Securing and Deploying Microsoft .NET Assemblies (Prerelease)

Microsoft®

11.27